

Prominent Transformation of Cloud Computing Platforms and Its Forces

S. Srinivasan, Dr. K. Raja

Research Scholar, Bharathiar University

Dean, Academic, Alpha College of Engineering, Chennai, India.

ABSTRACT: Cloud computing is one of the present common exhilarating technologies due to its ability to reduce costs associated with huge capacity of computing while growing elasticity and scalability for computer resources and processes. Cloud computing is Internet-based computing, whereby shared resources, software and information, are provided to computers and devices on-demand like the electricity grid.

It aims to build an ideal system with dominant computing facility through a large number of moderately low-cost computing entities and using the highly developed business models. The creation of on-premises application platform into cloud environment with partial foundations infrastructure and functional services. The combination of cloud platform structural design and on-premises platform together is a colossal reform on building a massive environment on today's cloud computing environment.

SOA is a place of services and promoter the principles of component reuse and well distinct association between a service provider and service consumer. This paper introduces the background, services and service form of cloud computing and have common distinctiveness of SOA and cloud computing.

Keywords: Cloud platforms, SOA, Integration, API

I. Introduction

Cloud provides everything as a service, aiming to provide a more active, scalable and cost effective infrastructure and application platform to the customer.

Cloud computing is a general term for anything that involves delivering hosted services over the Internet. It can be broadly divided into three categories as Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and

Software-as-a-Service (SaaS). Cloud service characteristics are on demand, flexible and service.

A public cloud provides global services. A private cloud is a proprietary network or a data center that supplies hosted services to a limited number of people. When a service provider uses public cloud resources to create their private cloud, the result is called a virtual private cloud.

The objective of cloud computing is to provide ease of use, countable access to computing resources and information technology services. Service Oriented Architecture in Information Technology promotes use of shared model of resources that are improved with abstraction.

II. CLOUD SERVICES

To get a hold on cloud platforms, it's useful to begin by looking at cloud services in general.

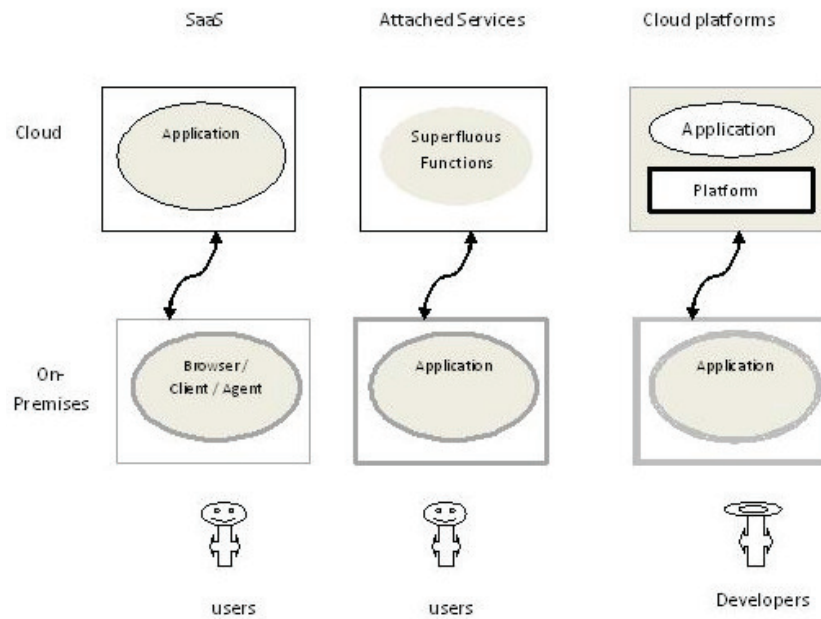


Figure 1: Various kinds of cloud services.

As Figure 1 shows the various kinds of cloud services as follows,

- Software as a Service (SaaS)
- Attached Services
- Cloud platforms.

A. Software as a Service

This application working fully in the cloud. The on-premises client is naturally a browser.

B. Attached Services

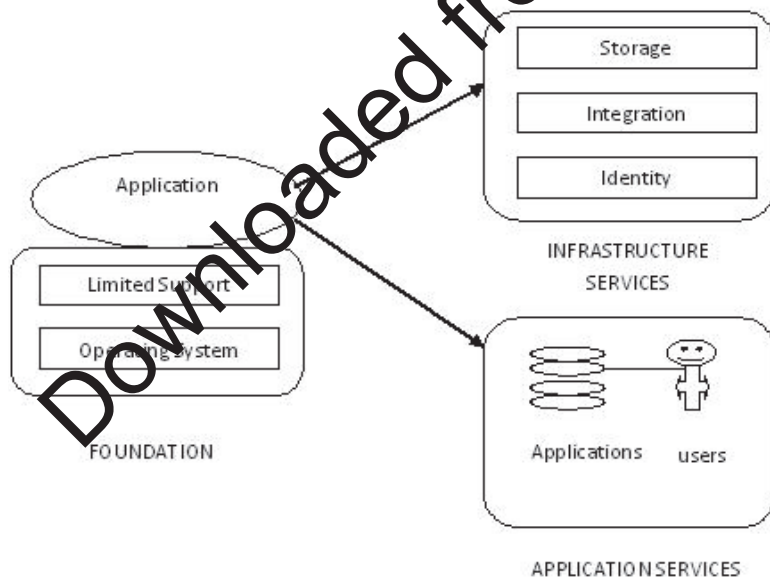
All on-premises software provides useful operation by itself.

C. Cloud Platforms

A cloud platform provides cloud-based services for developing application.

III. General Model For Application Platforms Architecture

All application platforms are mostly derived from on-premises platforms. Now the developer converts the application platform on on-premises environment into cloud as shown Figure 2.



As Figure 2 illustrates an application platform consist of three components as

- Foundation
- Group of Infrastructure services
- Set of application services

A. Foundation

Each function exploits various platform software on the machine its own execution. It includes various support functions such as standard libraries and storage and a base operating system.

Figure 2: A modern Application platform

in cloud environment

B. Group of Infrastructure Services

In a recent scattered environment, applications regularly utilize essential services provided on other computers.

C. Set of Application Services

The on-premises foundation consists of operating system (Windows, Linux and other versions of UNIX) and local support.

The .NET Framework application servers offer common support for Web based applications.

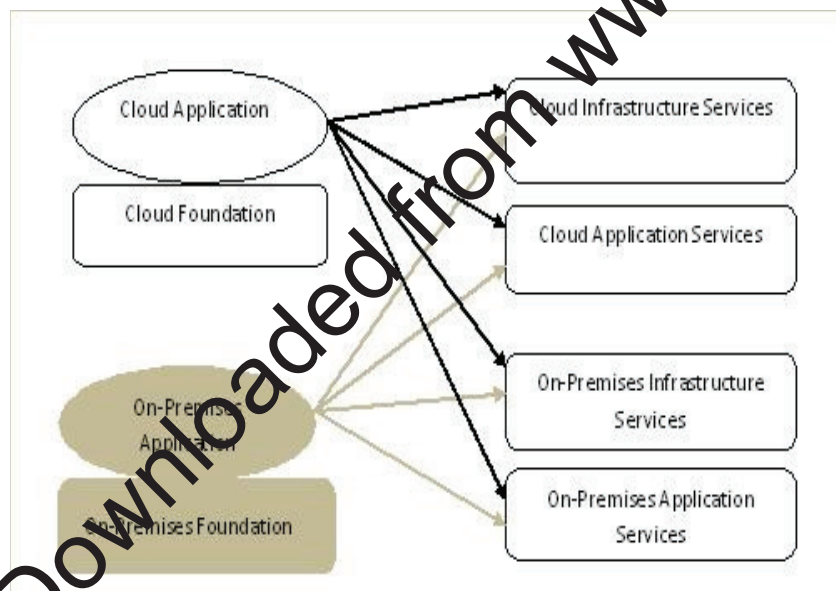
For on-premises infrastructure services, common examples include the following: storage (byte oriented storage), Integration (a message queue is the example for integration) and Identity.

The application in the on-premises platform is divided into two categories as packaged applications and custom applications.

IV. Integration Of On-Premises Platform and Cloud Platform

As the Figure 3 demonstrates, a cloud application can be built on a cloud foundation, while an on-premises application is built on an on-premises foundation. These applications can approach infrastructure and application services offered on-premises and in the cloud.

Figure 3: Integration of On-Premises and Cloud platforms



V. Service Oriented Architecture (SOA)

SOA is a concept which has influenced IT architectures in recent days. It represents and allows access to well-defined services, and then abstracts them to modular layers, which helps in application development, reuse and ease of integration.

VI. SOA OVERLAP CLOUD

Cloud computing represents an “expandable” and “soft” IT framework or platform, which

is exposed over the internet and enables enterprises to use their resources and services to the maximum potential. It provides a platform for developers to build tailored applications.

In cloud computing, infrastructure components are provided as hardware elements, as software are provided as web services, applications are exposed as APIs to the external world with high information security. Thus cloud computing has fundamental dominion of re-use and service orientation that runs the whole time. So SOA supports cloud at the first instance.

The SOA defines architectural principles for enterprise systems by defining interfaces, processes and communication between various sub system, focusing on predictable patterns and service behaviors. SOA is a set of services and advocate the principles of component reuse and well defined relationship between a service provider and service consumer.

SOA facilitate the chronic use of existing application functionality and attempts to share a common resources, information services and processes across the organization. Figure 4 shows how the cloud and SOA overlap.

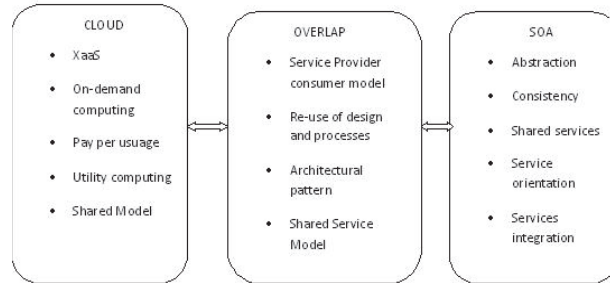


Figure 4: Overlapping cloud and SOA

SOA principles help cloud computing architecture to deliver the required services model with quickness and scalability. Service integration is the key aspect of cloud computing and is not limited to infrastructure or applications running over it. Integration between various IT infrastructure components, various application and workflow components, as well as between various service

processes are becoming a corner stone in today's IT enterprise.

The below Figure 5 shows SOA for cloud starts within the enterprise SOA has to be undertaken for the IT enterprise even in an on-premise environment, where a framework is established for the IT architecture, processes are defined and tools defined. This is the starting point for implementing the service orientation.

Abstraction of various services and definition of solution for various application and business requirements need to be done within the organization, and the same implemented in cloud. The roadmap for implementing SOA on cloud is to starts internally, build and test the processes, and finally move to the cloud.

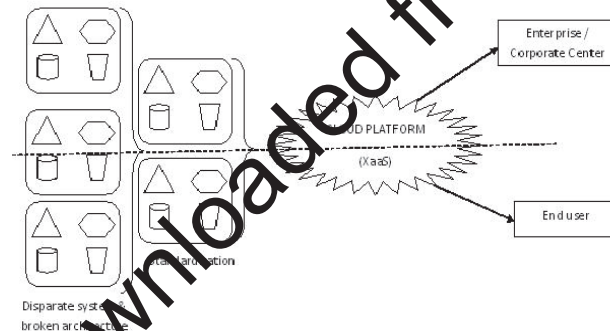


Figure 5: SOA principles pass through an enterprise and cloud

VII. Implementation and Result

This paper is a systematic study of integration of cloud computing different structure and introduces of services of architecture on cloud computing gives the quality services to various customers with highly tolerant features and result of this paper to avoid frustration on various building cloud platforms and security

instances of cloud computing. The implementation of the integration of cloud platforms, on-premises environment and overlapping service oriented architecture give more efficiency, reduction of cost, flexible to current usage of cloud computing users.

VIII. CONCLUSION

The significance of cloud computing are scalability, expandability and reality. SOA and cloud are complementary to each other and it can be pursued either independently or concurrently. Increasingly SOA is being connected well with cloud and there are plenty of applications of SOA principles in architecting the

cloudscape. There are some issues arises on overlapping SOA and cloud computing are security services such as authentication, confidentiality and integrity. Openness and flexible of cloud computing is double edge sword that carry complexity, reduce the trust degree and threat against security, so there should be a balance required between security and convenience.

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